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ABSTRACTS

Edited by DAVID E. ZITARELLI

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In order to facilitate reference and indexing, entries are given abstract numbers which appear at the end following the symbol #. A triple numbering system is used: the first number indicates the volume, the second the issue number, and the third the sequential number within that issue. For example, the abstracts for Volume 20, Number 1, are numbered: 20.1.1, 20.1.2, 20.1.3, etc.

For reviews and abstracts published in Volumes 1 through 13 there are an *author index* in Volume 13, Number 4, and a *subject index* in Volume 14, Number 1.

The initials in parentheses at the end of an entry indicate the abstractor. In this issue there are abstracts by Víctor Albis (Bogotá), Irving Anellis (Ames, IA), Thomas L. Bartlow (Villanova, PA), John G. Fauvel (Milton Keynes), Louise S. Grinstein (Brooklyn), Calvin Jongsma (Sioux Center, IA), Herbert E. Kasube (Peoria, IL), Albert C. Lewis (Hamilton), H. G. Steiner (Bielefeld), Paul Wolfson (West Chester, PA), and David E. Zitarelli.

AABOE, ASGER; AND BERGGREN, J. LENNART. Didactical and Other Remarks on Some Theorems of Archimedes and Infinitesimals, *Centaurus* **38** (1996), 295–316. Theorems 17–20 in Archimedes's *On the Sphere and Cylinder, I* often appear opaque on first reading. The authors present "a certain point of view from which the theorems look almost obvious." They suggest that this view may also represent the structure of Archimedes's own reasoning. (ACL) #24.2.1

ABGRALL, PHILIPPE. Les cercles tangents d'al-Qūhī [The Tangent Circles of al-Kūhī], *Arabic Sciences and Philosophy: A Historical Journal* **5** (2) (1994), 140–141, 143, 263–295. Original Arabic text, translation, and commentary on a work by the 10th-century geometer, Abū Sahl al-Kūhī, treating circles tangent to two given objects, either of which may be a point, a straight line, or a circle, and whose center lies on a given curve. See the review by J. L. Berggren in *Mathematical Reviews* **96k**:01008. (CJ) #24.2.2

ADOLIO CASCANTE, NORMA; GONZÁLEZ ARGÜELLO, CARMEN MARÍA; AND GONZÁLEZ ARGÜELLO, FABIO. Una nueva escuela de matemática en una nueva Universidad [A New School of Mathematics in a New University], pp. 211–237 in #24.2.157. In 1973 the Universidad Nacional of Costa Rica was created using as a basis the existing normal schools to provide college level and further instruction to prospective teachers. Nowadays, there are programs in pure mathematics and mathematical education. (VA) #24.2.3

0315-0860/97 $25.00

ALBORN, TIMOTHY L. The Business of Induction: Industry and Genius in the Language of British Scientific Reform, 1820–1840, *History of Science* **34** (1996), 91–121. Scientific reformers in London and Cambridge viewed the social side of their task in terms of the paradoxical legacy of Adam Smith. Two different economic models for reorganizing British science came to the fore in the 1820s and 1830s: Adam Smith's conception of the division of labor (Babbage and Herschel) and the entrepreneurial individualism of genius argued for by Whewell. (JGF) #24.2.4

AMER, MOHAMED. *See* #24.2.66.

ANDERSON, IAN. A Hundred Years of Whist Tournaments, *Journal of Combinatorial Mathematics and Combinatorial Computing* **19** (1995), 129–150. This paper begins with a brief historical introduction in which the author traces constructions of whist tournaments Wh($4n$) back to books and articles published in the 1890s and constructions of whist tournaments Wh($4n+1$) back to 1954. See the review by Peter M. Neumann in *Mathematical Reviews* **96j**:01021. (HEK) #24.2.5

ANON. *A Short Account of George Bidder, the Celebrated Mental Calculator; With a Variety of the Most Difficult Questions, Proposed to Him at the Principal Towns in the Kingdom, and His Surprising Answers!* Bedford, England: KSL Publications, 1995, 36 pp., £1.95. Facsimile of the text of the 1850 edition, reprinted with two portraits of Bidder (1806–1878) and a one-page introduction. (PW) #24.2.6

ANON. *National Council of Teachers of Mathematics Membership Directory,* White Plains, NY: Harris, 1996, 730 pp., paperbound. In addition to the usual information supplied by directories of academic organizations, this one has a list of mathematics specialties that includes history and multiculturalism, separately, and a listing by e-mail address. (DEZ) #24.2.7

ARBOLEDA, LUIS CARLOS; AND RECALDE, LUIS CORNELIO. El infinito actual y las técnicas del infinito no numerable: Una contribución metodológica [The Actual Infinite and Techniques of Uncountable Infinity: A Methodological Contribution], pp. 175–183 in #24.2.137. This methodological contribution is intended to recognize, characterize, and teach the concept of infinity in mathematics. (VA) #24.2.8

ARENZANA HERNÁNDEZ, VÍCTOR. *See* #24.2.76.

ASHTEKAR, ABBAY, S. Chandrasekhar: A Personal Portrait, *Current Science* **70** (1996), 102–103. An obituary of Subrahmanyan Chandrasekhar. *See* #24.2.180. (HEK) #24.2.9

ASTORGA MORALES, ALCIDES; MENESES RODRÍGUEZ, SHARAY; AND RODRÍGUEZ SMITH, JULIO. Las matemáticas en el Instituto Tecnológico de Costa Rica [Mathematics at the Technological Institute of Costa Rica], pp. 239–270 in #24.2.157. Created in 1971, and intended for new engineering careers, the Department of Mathematics in the Technological Institute of Costa Rica is in charge of the mathematical instruction for prospective engineers, and their academic production has focused on textbooks. (VA) #24.2.10

AUSEJO, ELENA. La enseñanza de las matemáticas en España a comienzos del siglo XX: Un debate para su reforma [The Teaching of Mathematics in Spain at the Beginning of the 20th Century: A Debate on Its Reform], pp. 61–73 in #24.2.137. A discussion of the contributions of Zoel García de Galdeano to the debate on reforms in teaching mathematics at the beginning of the 20th century. (VA) #24.2.11

BARRANTES CAMPOS, HUGO. Las matemáticas en la Universidad Estatal a Distancia [Mathematics at the State Open University], pp. 271–280 in #24.2.157. The UNED was created in 1977. For its specific purposes some titles on mathematical subjects have been published. (VA) #24.2.12

BARRANTES CAMPOS, HUGO; AND RUIZ ZÚÑIGA, ÁNGEL. En la Escuela Normal y en los Colegios [The Normal School and High Schools], pp. 79–96 in #24.2.157. The work of the Escuela Normal de Costa Rica in the formation of primary and high school teachers and their influence in the teaching of mathematics at those levels during the first half of this century. A Chilean mission had a great influence

on the orientation of the Escuela. There is also an analysis of the first mathematics textbooks. The Escuela later became the School of Pedagogy of the University of Costa Rica. (VA) #24.2.13

Barrantes Campos, Hugo; and Ruiz Zúñiga, Ángel. La carrera de enseñanza en la Universidad de Costa Rica [The Mathematical Education Program at the University of Costa Rica], pp. 191–209 in #24.2.157. A description of programs for training high school mathematics teachers. (VA) #24.2.14

Barrantes Campos, Hugo; and Ruiz Zúñiga, Ángel. La reforma de Mauro Fernández y las matemáticas [The Reform of Mauro Fernández and Mathematics], pp. 35–53 in #24.2.157. A study of the effect of educational reform, due to Mauro Fernández around 1885, on teaching mathematics in Costa Rica. Fernández's model was framed in an ideological and political context intended to face religious and colonial influence still present in 19th-century Costa Rica. (VA) #24.2.15

Barrantes Campos, Hugo; and Ruiz Zúñiga, Ángel. Los programas antes de la creación de la Universidad [Curricula before the Creation of the University], pp. 55–77 in #24.2.157. The efforts of Costa Rica to improve the teaching of mathematics at all levels of instruction and the effects of some foreign missions for this purpose. (VA) #24.2.16

Barrantes Campos, Hugo; Campos Bejarano, Pilar; and Ruiz Zúñiga, Ángel. *La Escuela de Matemática de la Universidad de Costa Rica: Una reseña histórica* [*The School of Mathematics at the University of Costa Rica: A Historical Outline*], San José, Costa Rica: Ángel Ruiz Zúñiga, 150 pp. Description of the origin, academic programs, research, and publications of the School of Mathematics at the University of Costa Rica. (VA) #24.2.17

Barrantes Campos, Hugo; Campos Bejarano, Pilar; and Ruiz Zúñiga, Ángel. El Departamento y la Escuela de Matemática de la Universidad de Costa Rica [The Department and the School of Mathematics at the University of Costa Rica], pp. 145–189 in #24.2.157. Information on a new era of mathematics in Costa Rica, including the initiation of independent studies of pure mathematics, graduate studies, the beginning of formal research, and specialized publications. (VA) #24.2.18

Bartholomew, D. J. Spearman and the Origin and Development of Factor Analysis, *British Journal of Mathematical and Statistical Psychology* **48** (1995), 211–220. Spearman's concern with the notion of a general factor prevented him from realizing the full potential of the factor analysis which he invented. Leadership passed to Thurstone and Thomson but progress was fitful; factor analysis was but slowly and incompletely assimilated into the statistical mainstream, hampered by inadequate computing facilities and a limited conceptual framework. (JGF) #24.2.19

Bateman, Paul T.; and Diamond, Harold G. A Hundred Years of Prime Numbers, *The American Mathematical Monthly* **103** (1996), 729–741. A survey of early work on the distribution of primes, the proof of the prime number theorem, and some later developments. (DEZ) #24.2.20

Becher, Harvey W. Radicals, Whigs and Conservatives: The Middle and Lower Classes in the Analytical Revolution at Cambridge in the Age of Aristocracy, *British Journal for the History of Science* **28** (1995), 405–426. The author analyzes the highly charged political scene at Cambridge in the early 19th century in order to see who was acceptable and who was not, so as to determine the path mathematical Cambridge would follow. See the review by Jeremy Gray in *Mathematical Reviews* **96j**:01022. (HEK) #24.2.21

Bekemeier, Bernd. *See* #24.2.76.

Bendall, Sarah. Interpreting Maps of the Rural Landscape: An Example from Late Sixteenth-Century Buckinghamshire, *Rural History* **4** (1993), 107–121. Four maps in New College Oxford, drawn in the 1590s by a Fellow of New College, Erasmus Williams, provide evidence of the interest in practical mathematics and surveying in late 16th-century Oxford. (JGF) #24.2.22

BERGGREN, J. L. Al-Kūhī's *Filling a Lacuna in Book II of Archimedes* in the Version of Naṣīr Al-Dīn Al-Ṭūsī, *Centaurus* **38** (1996), 140–207. The author presents the first scholarly edition and translation into English of a work by Abū Sahl al-Kūhī, an Arabic mathematician of the second half of the 10th century. (ACL) #24.2.23

BERGGREN, J. LENNART. *See also* #24.2.1, #24.2.2, and #24.2.100.

BERISSO, MARÍA LÍA. Ciencia, técnica y legitimación en el capitalismo tardío [Science, Technique and Legitimization in Late Capitalism], *Galileo* **11** (May 1995), 35–46. (VA) #24.2.24

BERTOLONI MELI, DOMENICO. The Neoterics and Political Power in Spanish Italy: Giovanni Alfonso Borelli and His Circle, *History of Science* **34** (1996), 57–89. Attitudes of the neoterics—intellectuals broadly linked to the philosophies of Galileo, Gassendi, and Descartes—in the third quarter of the 17th century in the kingdoms of Sicily and Naples. A central figure in political activities was G. A. Borelli, professor of mathematics at Messina 1639–1656. (JGF) #24.2.25

BOCKSTAELE, P. *See* #24.2.173.

BOIDO, GUILLERMO; AND FLICHMAN, EDUARDO H. Mecanicismo: Acepciones con historia [Mechanism: Meanings with History], *Galileo* **11** (May 1995), 47–64. The authors propose an historical journey, from the ontological and epistemological point of view rather than the semantic viewpoint, to accompany the manifold meanings and uses of the word ''mechanism'' in the history and philosophy of sciences. (VA) #24.2.26

BOWLES, MARK D. U.S. Technological Enthusiasm and British Technological Skepticism in the Age of the Analog Brain, *IEEE Annals of the History of Computing* **18** (4) (1996), 5–15. Surveys development of British and U.S. differential analyzers from 1930 to 1945. (LSG) #24.2.27

BRACK-BERNSEN, LIS; AND SCHMIDT, OLAF. On The Foundations of the Babylonian Column Φ: Astronomical Significance of Partial Sums of the Lunar Four, *Centaurus* **37** (1994), 183–209. Using modern and ancient ideas, this paper presents an astronomical interpretation and analysis of partial sums of the lunar four (horizontal phenomena observed by the Babylonians). A discussion of the implications for the development of Babylonian astronomy is given. (ACL) #24.2.28

BRIGAGLIA, ALDO; AND CILIBERTO, CIRO. *Italian Algebraic Geometry between the Two World Wars,* Kingston: Queen's Univ. Press, 1995, vii + 223 pp., paperbound. A collection of essays, translated from Italian, on the development of algebraic geometry in Italy between 1920 and 1940. (DEZ) #24.2.29

BUJÁN DELGADO, VÍCTOR. Olimpiadas matemáticas y colegios científicos [Mathematical Olympiads and Scientific Colleges], pp. 393–401 in #24.2.157. A report on the results obtained in Costa Rica on National and International Mathematical Olympiads. (VA) #24.2.30

BUTZER, P. L. The Hausdorff–Young Theorems of Fourier Analysis and Their Impact, *Journal of Fourier Analysis and Its Applications* **1** (1994), 113–130. H. Triebel describes this as ''an excellent historically oriented survey paper'' in *Mathematical Reviews* **96i**:01020. (ACL) #24.2.31

CAMPOS BEJARANO, PILAR. *See* #24.2.17 and #24.2.18.

CARVALHO E SILVA, JAIME. History of Mathematics in the Classroom: Hopes, Uncertainties and Dangers, pp. 129–135 in #24.2.137. The author uses and disseminates material from the history of mathematics in his classroom, taking into account its many positive aspects over the inherent dangers and uncertainties. (VA) #24.2.32

CAVEING, MAURICE. The Debate between H. G. Zeuthen and H. Vogt (1909–1915) on the Historical Source of the Knowledge of Irrational Quantities, *Centaurus* **38** (1996), 277–292. The debate referred to in the title centered on four points relating to the interpretation of Plato's *Theaetetus* and for decades provided a historiographical framework for the history of Greek mathematics before Euclid. (ACL) #24.2.33

CHAMBERS, L. G. *See* #24.2.187.

CHRISTENSEN, CHRIS. Newton's Method for Resolving Affected Equations, *The College Mathematics Journal* **27** (1996), 330–340. An examination and comparison of Newton's recursive method and Raphson's iterative techniques for approximating real roots of an equation, followed by a description of a generalization by Newton. Appendices present translations into English of two letters from Newton to Leibniz. (DEZ) #24.2.34

CILIBERTO, CIRO; RIBENBOIM, PAULO; AND SERNESI, EDOARDO, eds. *Collected Papers of Ruggiero Torelli,* Kingston: Queen's Univ. Press, 1995, xii + 224 pp., paperbound. A collection of papers on algebraic geometry by the 20th-century Italian mathematician, R. Torelli. (DEZ) #24.2.35

CILIBERTO, CIRO. *See also* #24.2.29.

CLAGETT, MARSHALL. *Ancient Egyptian Science. Vol. 2: Calendars, Clocks, and Astronomy,* Philadelphia: American Philosophical Society, 1995, xvi + 722 pp., $50.00. Jens Høyrup, in his detailed review in *Mathematical Reviews* **96i**:01007, praises this latest volume in Clagett's series. Though devoted to technical details, the volume can serve as a guide to two centuries of Egyptological literature even for the nonspecialist. (ACL) #24.2.36

COLEMAN, A. JOHN. Groups and Physics—Dogmatic Opinions of a Senior Citizen, *Notices of the American Mathematical Society* **44** (1997), 8–17. An historical survey of the role of group theory in physics, beginning with the work of Elie Cartan and Hermann Weyl on relativity and quantum mechanics, and including Noether's Theorem in classical mechanics. (DEZ) #24.2.37

CORRY, LEO. Axiomática y álgebra estructural en la obra de David Hilbert [Axiomatics and Structural Algebra in David Hilbert's Work], *Mathesis* (*México*) **11** (1995), 291–329. A discussion of David Hilbert's contributions to the theory of algebraic invariants, the theory of algebraic number fields, and the study of the foundations of geometry. (VA) #24.2.38

CRÉPEL, PIERRE. *See* #24.2.74.

CROSSLEY, JOHN N.; AND LUN, A. W. C. The Logic of Liu Hui and Euclid as Exemplified in Their Proofs of the Volume of a Pyramid, *Philosophy and the History of Sciences* **3** (1994), 11–27. A comparison of the logic used by Euclid in his proof of the volume of a pyramid (*Elements* XII) with Liu Hui's proof, in his commentary on the *Jiu Zhang Suan Shu,* leads to a reassessment of the usual claim that Chinese mathematics was algorithmic and practical as opposed to the logical and theoretical Euclidean mathematics. (JGF) #24.2.39

CULLEN, CHRISTOPHER. How Can We Do the Comparative History of Mathematics? Proof in Liu Hui and the Zhou Bi, *Philosophy and the History of Science* **4** (1995), 59–94. In comparing Chinese and Western mathematics historically, the working assumptions must be carefully scrutinized: how far, in particular, the word *proof* can be used to describe ancient activities in different cultures. Fu Daiwie's analogy of bilingualism may help counter a historiography which is too positivist. (JGF) #24.2.40

DALLAL, AHMAD S. Ibn Al-Haytham's Universal Solution for Finding the Direction of the Qibla by Calculation, *Arabic Sciences and Philosophy: A Historical Journal* **5** (2) (1995), 139, 141, 145–193. In this paper the author edits the Arabic text of ibn al-Haytham on the determination of the qibla (the direction a Muslim has to face when praying) and supplies an English translation of the same and a commentary written in modern mathematical terms. See the review by George Saliba in *Mathematical Reviews* **96j**:01006. (HEK) #24.2.41

D'AMBROSIO, UBIRATAN. O futuro da historia: Algumas preocupações metodológicas [The Future of History: Some Methodological Concerns], pp. 47–54 in #24.2.137. Reflections on historiography and mathematics. (VA) #24.2.42

D'ANGELO, JOHN P. Joseph J. Kohn, in *Modern Methods in Complex Analysis* (*Princeton, NJ 1992*), Princeton: Princeton Univ. Press, 1995, pp. 15–28. Biography of the complex analyst, Joseph J. Kohn. See *Mathematical Reviews* **96i**:01026. (ACL) #24.2.43

DA SILVA, CLÓVIS PEREIRA. Development of the Mathematics in Paraná: Federal University of Paraná. A Case Study, pp. 173–174 in #24.2.137. The author presents a research project to review the teaching and development of mathematics in the Federal University of Paraná. (VA) #24.2.44

DAUBEN, JOSEPH; FOLKERTS, MENSO; KNOBLOCH, EBERHARD; AND WUSSING, HANS. *History of Mathematics: States of the Art: flores quadrivi: Studies in Honor of Christoph J. Scriba,* San Diego: Academic Press, 1996, xxiv + 394 pp., $59.95. A collection of articles on such topics as anamorphic art, the geometry of Durer, musical works of Mozart and Beethoven, negative numbers, mathematical notation, and applications to commerce and engineering. Most of the papers are in German, but all have English summaries. Each essay will be abstracted separately. (DEZ) #24.2.45

DAVIS, MARTIN. *See* #24.2.149.

DÉBARBAT, SUZANNE. An Unusual Use of an Astronomical Instrument: The Dreyfus Affair and the Paris *macro-micromètre, Journal for the History of Astronomy* **27** (1996), 45–52. In 1904 three mathematicians, Paul Appell, Gastron Darboux, and Henri Poincaré, were appointed to report on the authenticity of the notorious bordereau which had led in 1894 to Dreyfus being branded a traitor. They studied the document using an instrument designed to measure astronomical plates. In 1906 the bordereau was recognized as a forgery and Dreyfus was rehabilitated. (JGF) #24.2.46

DENTON, JOHN. *See* #24.2.153.

DIAMOND, HAROLD G. *See* #24.2.20.

DIEKS, DENNIS. *See* #24.2.64.

DUCHESNEAU, FRANÇOIS. *La dynamique de Leibniz,* Paris: Libraire Philosophique J. Vrin, 1994, 368 pp., 195 F. A study of the development of Leibniz's dynamics. See the detailed review by Niccolò Guicciardini, *Mathematical Reviews* **96i**:01014. (ACL) #24.2.47

DUMITRESCU, C.; AND SELACU, V. *Some Notions and Questions in Number Theory,* Glendale, AZ: Erhus Univ. Press, 1994. A booklet collecting some of the questions and results of the Rumanian–American mathematician, Florentin Smarandache, from papers held in various archives. (PW) #24.2.48

DUTKA, JACQUES. On Gauss' Priority in the Discovery of the Method of Least Squares, *Archive for History of Exact Sciences* **49** (1996), 355–370. When Gauss referred to Legendre's 1806 book as publishing "our principle," Legendre was understandably annoyed, for he had developed the method of least squares independently. Nevertheless, Gauss's claim that he discovered the method in 1794, at the age of 17, seems justified. (JGF) #24.2.49

EDWARDS, A. W. F. Is the Frontispiece of *Gulliver's Travels* a Likeness of Newton? *Notes and Records of the Royal Society* **50** (1996), 191–194. It looks like it, but the one in the 1735 Dublin edition looks more like John Arbuthnot. (JGF) #24.2.50

EELSALU, H. *See* #24.2.194.

FALCONER, ETTA Z.; AND LORCH, LEE. Vivienne Malone-Mayes, Pathfinder, *Focus* **16** (3) (1996), 8. Brief notice of the death of Vivienne Malone-Myers, the fifth African-American woman to receive a Ph.D. in mathematics (University of Texas, 1966). (DEZ) #24.2.51

FAUVEL, JOHN. J. J. Sylvester and the Papers of "Old Father Harriot," *The Harrioteer* (September 1996), 2–5. In September 1883, J. J. Sylvester visited Petworth House, Sussex, where he looked at the papers of Thomas Harriot. His judgment that Harriot "first introduced the algebraical zero into analysis" casts an interesting light on his perceptions of mathematical history. (JGF) #24.2.52

FEDERSPIEL, MICHEL. Sur la définition euclidienne de la droite, in *Mathématiques et philosophie de l'antiquité à l'âge classique,* Paris: CNRS, 1991, pp. 115–130. A basis for a new interpretation of Euclid's definition of the straight line in the *Elements* is to be found in a passage in Plato's *Parmenides* 150a. See the review by Victor V. Pambuccian in *Mathematical Reviews* **96i**:01009. (ACL) #24.2.53

FERNÁNDEZ MORENO, LUIS. La noción de inconmensurabilidad en Kuhn [Kuhn's Notion of Incommensurability], *LLULL* **18** (1995), 441–456. Incommensurability in the philosophy of science, particularly in Thomas Kuhn's *The Structure of Scientific Revolutions.* (VA) #24.2.54

FERREIRA, EDUARDO SEBASTIANI. A metade maior do sanduice é minha [The Greater Half of the Sandwich Is Mine], pp. 137–143 in #24.2.137. The apparently paradoxical sentence in the title provides a good excuse to point out the possibility of a nondeterministic mathematics closer to the man/nature relationship. (VA) #24.2.55

FERREIRA, EDUARDO SEBASTIANI. O ensino da razão e proporção via historia da matemática [The Teaching of Ratios and Proportions through the History of Mathematics], p. 223 in #24.2.137. (VA) #24.2.56

FERREIRÓS, JOSÉ. Traditional Logic and the Early History of Sets, 1854–1908, *Archive for History of Exact Sciences* **50** (1996), 1–67. Cantor is rightly considered the founder of transfinite set theory, but sets appear in mathematics earlier. The work of Riemann and Dedekind, in particular, offers clear examples of the use of set language in mathematics and the elaboration of foundational views based on the notion of set. (JGF) #24.2.57

FIELD, JUDITH V. Piero Della Francesca and the ''Distance Point Method'' of Perspective Construction, *Nuncius* **10** (1995), 509–529. The earliest written account of the ''distance point method'' of perspective construction is in a 1505 text by Viator. A diagram like that used in the construction is found in all known copies of Piero's *De prospectiva pingendi* (1460s), although the accompanying text is missing in the Latin translation of Piero's work. An appendix gives Piero's own proof, in Tuscan, of the correctness of his perspective construction. (JGF) #24.2.58

FIGOLI, FRANKLIN. The Object Orientation of Intuitive Reasoning, pp. 205–211 in #24.2.137. An examination of material that was omitted by logicians after dealing with certain restrictions on intuitive reasoning related to paradoxes or antinomies. (VA) #24.2.59

FLAMENT, DOMINIQUE. *See* #24.2.76.

FLICHMAN, EDUARDO H. *See* #24.2.26.

FOLKERTS, MENSO. C. F. Gauß' Beitrag zur Besetzung von Professuren der Universität Göttingen [C. F. Gauss' Contribution to the Filling of Professorships at the University of Göttingen], *Gauss-Gesellschaft e. V. Göttingen. Mitteilungen* **32** (1995), 3–34. This paper provides new archival material concerning the activities of C. F. Gauss in regard to vacant positions at the University of Göttingen. Some letters to and from Gauss are published in the appendix for the first time. See the review by Hans Niels Jahnke in *Mathematical Reviews* **96j**:01045. (HEK) #24.2.60

FOLKERTS, MENSO. *See also* #24.2.45.

FORYS, WIT; PIN, JEAN-ERIC; AND THÉRIEN, DENIS. Robert Knast (1940–1994), *Semigroup Forum* **52** (2) (1996), 109–111. Obituary. *Mathematical Reviews* **96i**:01027. (ACL) #24.2.61

FOWLER, DAVID. The Binomial Coefficient Function, *American Mathematical Monthly* **103** (1996), 1–17. The surface defined by the binomial function $C(x, y) = x!/(y!\ (x - y)!)$ is complicated and fascinating, with a long deep history. The only previous hint of the line of singularities of C on $x = -1$ is found in a table in John Wallis's *Arithmetica infinitorum* (1656). (JGF) #24.2.62

FRANKENSTEIN, MARILYN. Various Uses of History in Teaching Critical Mathematical Literacy, pp. 91–98 in #24.2.137. The author describes the content and results of her courses oriented to urban working class adults. (VA) #24.2.63

FRIEDMAN, MICHAEL. Carnap and Weyl on the Foundations of Geometry and Relativity. Reflections on Spacetime: Foundations, Philosophy, History, *Erkenntnis* **42** (1995), 247–260. The development of non-Euclidean geometry, and its use in the theory of relativity, did not immediately lead to a dominance of empiricism in the philosophy of geometry. In his doctoral dissertation (1922) Carnap distinguished

formal, intuitive, and physical space. Weyl focused on physical space and the position of the knowing subject in it. He did not follow Carnap's idea that only the topological is essential. See the review by Dennis Dieks in *Mathematical Reviews* **96j**:01030. (HEK) #24.2.64

GAAL, LISL. *See* #24.2.149.

GALUZZI, MASSIMO. *See* #24.2.70.

GARCÍA DE ZÚÑIGA, EDUARDO. *Lecciones de historia de las matemáticas* [*Lectures on the History of Mathematics*], Montevideo: Facultad de Humanidades y Ciencias de la Educación, Universidad de la República, 1990, 117 pp. See the review by Mariano Hormigón in *LLULL* **18** (1995), 691–693. (VA) #24.2.65

GARRO, IBRAHIM. The Paradox of the Infinite by al-Kindī, *Journal for the History of Arabic Science* **10** (1–2) (1994), 111–118, 143. Mathematical and philosophical discussion of al-Kindī's paradox of the infinite. Compares his work with that of the Greeks. See the review by Mohamed Amer in *Mathematical Reviews* **96k**:01009. (CJ) #24.2.66

GERDES, PAULUS. Afrikanische Geometrien im Mathematikunterricht, in *Der Wandel im Lehren und Lernen von Mathematik und Naturwissenschaften,* Weinheim: Deutscher Studien Verlag, 1994, pp. 192–202. Two examples of southern African geometries which have potential for helping to incorporate the African mathematical heritage and practices into mathematics education are given. A summary only is given in *Mathematical Reviews* **96i:**01006. (ACL) #24.2.67

GERDES, PAULUS. Examples of Incorporation into Mathematics Education of Themes Belonging to the History of Geometry in Africa, pp. 213–221 in #24.2.137. Author's abstract: ''In this paper we will briefly present two examples that we have been analyzing: The living tradition of the originally female geometry of the ornamentation of *sipatsi* handbags in Mozambique's Inhambane Province and the almost disappeared tradition of the male geometry of *soma* sand drawings mostly of Eastern Angola and North Western Zambia.'' (VA) #24.2.68

GESSLER, NADINE. George Boole et l'algèbre de la logique, in *Études logiques,* Neuchâtel: Univ. of Neuchâtel, 1993, pp. 123–169. This paper describes the underlying ideas behind George Boole's algebra of logic and their links with George Peacock's symbolic algebra and with the conceptions of Augustus De Morgan in his formal logic. Those who would like to discover that chapter in the history of mathematics will find here a valuable introduction to the reading of Boole's works. See the review by Marcel Guillaume in *Mathematical Reviews* **96j**:01024. (HEK) #24.2.69

GIACARDI, LIVIA. Guido Grandi and the Leibnizian Calculus. Presentation of an Unpublished Manuscript [in Italian], *Bollettino di storia delle scienze matematica italiana* **14** (1994), 195–238. The (apparent) purpose of this paper is the presentation of an unpublished manuscript of Guido Grandi concerning Leibnizian calculus. The real aim seems to be to present an interesting description of the Italian scientific milieu during the late 17th century and the early 18th century. See the review by Massimo Galuzzi in *Mathematical Reviews* **96j**:01014. (HEK) #24.2.70

GILLIES, DONALD, ed. *Revolutions in Mathematics,* New York: Oxford Univ. Press, 1995, viii + 353 pp., paperbound, $45. Reprint of the hardbound version from 1992. See #21.4.45. (DEZ) #24.2.71

GLAS, EDUARD. *See* #24.2.115.

GODDU, ANDRÉ. Connotative Concepts and Mathematics in Ockham's Natural Philosophy, *Vivarium* **31** (1) (1993), 106–139. Provocative article that draws upon the history of science to challenge the standard philosophical assessment of Ockham's theory of connotative terms. Discusses its role in logic, mathematics, and natural philosophy. See the review by Woosuk Park in *Mathematical Reviews* **96k:**01011. (CJ) #24.2.72

GOLOMB, SOLOMON; HARRIS, THEODORE; AND SEBERRY, JENNIFER. Albert Leon Whiteman (1915–1995), *Notices of the American Mathematical Society* **44** (1997), 217–219. Obituary of the University of Southern California number theorist and combinatorialist, A. L. Whiteman. The ''Mathematical Family Tree of Hans Rademacher'' is flawed with omissions and misspellings. (DEZ) #24.2.73

GONZÁLEZ ARGÜELLO, CARMEN MARÍA. *See* #24.2.3.

GONZÁLEZ ARGÜELLO, FABIO. *See* #24.2.3.

GONZÁLEZ TASCÓN, IGNACIO. *See* #24.2.95.

GRANGER, GILLES GASTON. L'usage philosophique des mathématiques au XVIIe siècle in *Mathématiques et philosophie de l'antiquité à l'âge classique,* Paris: CNRS, 1991, pp. 287–301. Analysis of the type of mathematics used by 17th-century philosophers and the role it played in their thought. Main focus is on Spinoza and Pascal. See the review by Pierre Crépel in *Mathematical Reviews* **96k**:01012. (CJ) #24.2.74

GRANVILLE, ANDREW. Review of BBC's Horizon Program, ''Fermat's Last Theorem,'' *Notices of the American Mathematical Society* **44** (1997), 26–28. Review of a BBC television program that presents a brief history of the proof of FLT, including a dramatization of Fermat's famous marginalia but devoted mainly to Wiles's proof. A complete transcript is available at http://www.bbc.co.uk/horizon/95-96/960115.html. (DEZ) #24.2.75

GRASSMANN, HERMANN GÜNTHER. *La science de la grandeur extensive: La Lineale Ausdehnungslehre* [*The Science of Extensive Quantities: The Theory of Linear Extents*], Paris: Albert Blanchard, 1994, 52 + xvi + 206 + xlviii pp., 300 F. A translation of Grassmann's 1844 work from German to French by D. Flament and B. Bekemeier, largely without commentary, though the 50-page preface by Flament discusses the historical importance of Grassmann's work. See the reviews by J. S. Joel in *Mathematical Reviews* **96k:**01022 and Victor Arenzana Hernández in *LLULL* **18** (1995), 702–706. (CJ) #24.2.76

GRATTAN-GUINNESS, IVOR. Numbers, Multitudes, Ratios, and Proportions in Euclid's *Elements:* How Did He Handle Them? *Historia Mathematica* **23** (1996), 355–375. The author suggests reasons why the *Elements* cannot be interpreted as ''geometrical algebra.'' He provides evidence that this interpretation is flawed, then describes ''the quantities and propositions with which Euclid works, and the manner in which he handles them.'' [p. 357] (DEZ) #24.2.77

GRAUERT, HANS. Wie Gauß die alte Göttinger Mathematik schuf, in *Proceedings of the 2nd Gauss Symposium. Conference A: Mathematics and Theoretical Physics* (*Munich, 1993*), Berlin: de Gruyter, 1995, pp. 1–15. Mathematics in Göttingen from the 18th century up to 1959. See the brief review by Michael Otte in *Mathematical Reviews* **96i**:01038. (ACL) #24.2.78

GRAY, JEREMY J. Enriques and the Popularization of Mathematics, *The Mathematical Intelligencer* **18** (4) (1996), 51–54. Discusses Federigo Enriques's philosophy of mathematics as expressed in his book, *Problems of Science,* 1906. (TLB) #24.2.79

GRAY, JEREMY. *See also* #24.2.21.

GREENBERG, JOHN L. Isaac Newton and the Problem of the Earth's Shape, *Archive for History of Exact Sciences* **49** (1996), 371–391. The theory of the earth's shape presented by Newton in *Principia* Book III struck even the most reputable continental mathematicians as incomprehensible. Indeed, the reader faced many obstacles to understanding but these apparent drawbacks are strengths of Newton's theory, not weaknesses. (JGF) #24.2.80

GROMPONE, JUAN. Sobre la aceleración de la historia [On the Acceleration of History], *Galileo* **11** (May 1995), 15–34. Adam's law links time lag between scientific discovery and industrial application in a mathematical equation and predicts a null time lag in the middle of the 21st century. There is also an acceleration of history if we admit that major technological revolutions are in a geometric progression, related to human population increase. The author constructs a model of world penetration of capitalist

society to find a "final global society sometime in the 21st century." If to all of the above facts we add pollution, the greenhouse effect, species extinction, etc., the author "predicts" for the next century the "down of technological man." (VA) #24.2.81

GROPP, HARALD. "Gaußsche Quadrate" or Knut Vik Designs—The History of a Combinatorial Structure, in *Proceedings of the 2nd Gauss Symposium. Conference A: Mathematics and Theoretical Physics* (*Munich, 1993*), Berlin: de Gruyter, 1995, pp. 121–134. Euler investigated Latin squares in 1779 and conjectured that there are no Latin squares for numbers of the form $4n + 2$. The author follows the history of Latin squares to C. F. Gauss, H. C. Schumacher, and T. Clausen, all of whom discussed the problem about 60 years later without referring to Euler and added a further condition concerning the diagonals. Latin squares can be used to define Knut Vik designs and the history of these designs is sketched in the second part of this article. See the review by Karl-Heinz Schlote in *Mathematical Reviews* **96j**:01026. (HEK) #24.2.82

GROSCHE, J.; GÜNTSCH, F. R.; HELLWIG, G.; JESSEN, E.; TÖPFER, H.-J.; AND WENDLAND, W. Wolfgang Haack zum Gedächtnis, *Mitteilungen der Gesellschaft für angewandte Mathematik und Mechanik* **18** (2) (1995), 115–128. Obituary of Wolfgang Haack. See *Mathematical Reviews* **96i**:01030. (ACL) #24.2.83

GROSHOLZ, EMILY. Descartes and Galileo: The Quantification of Time and Force, in *Mathématiques et philosophie de l'antiquité à l'âge classique,* Paris: CNRS, 1991, pp. 197–215. Descartes's reductive method did not allow even Galileo's physical diagrams to have a place in geometry. See the review by Eberhard Knobloch, *Mathematical Reviews* **96i**:01016. (ACL) #24.2.84

GUICCIARDINI NICCOLÒ. *See* #24.2.47 and #24.2.159.

GUILLAUME, MARCEL. *See* #24.2.69.

GÜNTSCH, F. R. *See* #24.2.83.

HAHN, HANS. *Gesammelte Abhandlungen/Collected Works* [in German], Vienna: Springer-Verlag, 1995, xii + 511 pp., DM 158,40. This first volume of the collected works of Hans Hahn (1879–1934) begins with a brief forward by Karl Popper, one of Hahn's students, who describes Hahn's philosophical attitude and mentions his part in the foundation of the Vienna Circle (1921) and his role in Karl Menger's colloquium. There are also biographical sketches by Karl Popper and by L. Schmetterer and K. Sigmund and commentaries on Hahn's work by H. Heuser, H. Sagan, and L. Fuchs. See the review by Frank Smithies in *Mathematical Reviews* **96j**:01046. (HEK) #24.2.85

HARGITTAI, ISTVÁN. Lifelong Symmetry: A Conversation with H. S. M. Coxeter, *The Mathematical Intelligencer* **18** (4) (1996), 35–41. Hargittai interviews Coxeter about his life, his interest in polyhedra, and his contacts with M. C. Escher. (TLB) #24.2.86

HARRIS, THEODORE. *See* #24.2.73.

HASHAGEN, ULF. Die Mathematik und ihre Assistenten an der TH München (1868–1918), in *Proceedings of the 2nd Gauss Symposium. Conference A: Mathematics and Theoretical Physics* (*Munich, 1993*), Berlin: de Gruyter, 1995, pp. 135–146. The development of mathematics and the assistants at the TH Munich 1868–1918. See the brief review by Wilfried Schröder in *Mathematical Reviews* **96i**:01039. (ACL) #24.2.87

HASHIMOTO, KEIZO. *See* #24.2.165.

HEINZMANN, GERHARD. *Zwischen Objektkonstruktion und Strukturanalyse. Zur Philosophie der Mathematik bei Jules Henri Poincaré,* Göttingen/Zürich: Vandenhoeck & Ruprecht, 1995, 166 pp., paperbound, DM 52. A systematic reconstruction of Poincaré's philosophical position related to the foundations of arithmetic, geometry, logic, and set theory. It is shown that Poincaré's strategies of justification are historically disguised as conventionalist (for geometry) or apriorist (for arithmetic), but in reality are only a rhetoric exaggeration of arbitrariness and givenness. With respect to some foundational problems

repeatedly treated by Poincaré it is evidenced how certain apories are connected with a neglected unfeasible unity of object construction and object description. (HGS) #24.2.88

HELLWIG, G. *See* #24.2.83.

HELMBERG, GILBERT; AND SIGMUND, KARL. Nestor of Mathematicians: Leopold Vietoris Turns 105, *The Mathematical Intelligencer* **18** (4) (1996), 47–50. A brief life of one of the founders of algebraic topology, Leopold Vietoris, who is still an active mathematician. (TLB) #24.2.89

HELSON, HENRY. Mathematics in Poland after the War, *Notices of the American Mathematical Society* **44** (1997), 209–212. Lively reminiscences of the author's two-year peregrination through post-World War II Europe. The author recalls especially the mathematicians in Poland and the harsh conditions they faced. (DEZ) #24.2.90

HENSEL, SUSANN; IHMIG, KARL-NORBERT; AND OTTE MICHAEL. *Mathematik und Technik im 19.Jahrhundert in Deutschland,* Göttingen/Zürich: Vandenhoech & Ruprecht, 1989, x + 305 pp., paperbound, DM 85. The 19th century made visible not only developments of a new concept of science and increasing mutual independence among the sciences but also new problems of professionality and the social development of professions (especially those of mathematicians and engineers). The three essays that constitute this book are S. Hensel, ''Die Auseinandersetzungen um die mathematische Ausbildung der Ingenieure an den technischen Hochschulen in Deutschland Ende des 19.Jahrhundert''; K-N. Ihmig, ''Das Verhältnis von Mathematik und Kinematik bei Franz Reuleaux''; and M. Otte, ''Die Auseinandersetzungen zwischen Mathematik und Technik als Problem der historischen Rolle und des Typs von Wissenschaft.'' (HGS) #24.2.91

HERRERA JIMÉNEZ, RODOLFO. El profesor Dirk J. Struik en Costa Rica [Professor Dirk J. Struik in Costa Rica], pp. 333–345 in #24.2.157. An account of Struik's visits to Costa Rica and the beginning of studies on the history of mathematics in that country. (VA) #24.2.92

HERRERA, JIMÉNEZ, RODOLFO. González y las matemáticas en Costa Rica [Luis González and Costa Rican Mathematics], pp. 283–304 in #24.2.157. Biographical sketch of Costa Rican mathematics professor, Luis González. (VA) #24.2.93

HERRERA JIMÉNEZ, RODOLFO. La matemática en Costa Rica y la influencia del Dr. Biberstein [The Influence of Professor Biberstein on Costa Rican Mathematics], pp. 315–331 in #24.2.157. Professor Biberstein, of Polish origin, taught courses in advanced analysis and tensor analysis from a formalistic point of view, thus changing the perspective of modern mathematics in Costa Rica. (VA) #24.2.94

HERRERA, JUAN DE. *Institución de la Academia Real Mathemática* [*Curriculum of the Royal Academy of Mathematics*], Madrid: Instituto de Estudios Madrileño, 1995. A new edition of the book of the same title, first published in Madrid in 1584, containing an ambitious instruction program for the study of mathematics at the Royal Academy. This edition contains preliminary studies by José Simón Díaz and Luis Cerveza Vera, who also prepared it. See the review by Ignacio González Tascón in *LLULL* **18** (1995), 711–712. (VA) #24.2.95

HIGUERA ACEVEDO, CLARA LUCÍA. La Yupana incaica: Elemento histórico como instrumento pedagógico [The Yupana: Historical Element as a Pedagogical Instrument], pp. 75–87 in #24.2.137. This paper was published elsewhere. See #22.3.39. (VA) #24.2.96

HILDEBRANDT, STEFAN; AND TROMBA, ANTHONY. *The Parsimonious Universe: Shape and Form in the Natural World,* New York: Copernicus (Springer-Verlag), 1996, xii + 330 pp. $32.95. An exposition of some of the mathematical descriptions and laws governing natural shapes and form, emphasizing optimality principles. The book is designed for readers of *Scientific American* and similar publications. The same authors' earlier and similar *Mathematics and Optimal Form* was, in fact, in the *Scientific American Library.* The book is abundantly illustrated and includes extensive passages about the historical development of the mathematical ideas under discussion. (PW) #24.2.97

HIRANO, YOICHI. Quelques remarques sur les travaux de Lagrange—qui concernent la théorie des équations algébriques et la notion préliminaire de groupes, *Historia Scientiarum* **5** (2) (1995), 75–84. Some remarks on the works of Lagrange concerning the theory of algebraic equations and the preliminary notion of group. See the review by Victor J. Katz, *Mathematical Reviews* **96i**:01017. (ACL) #24.2.98

HOFER, HELMUT; TAUBES, CLIFFORD; WEINSTEIN, ALAN; AND ZEHNDER, EDUARD (eds.) *The Floer Memorial Volume,* Basel/Boston/Berlin: Birkhäuser Verlag, 1995, xii + 685 pp., $98.00. A collection of essays commemorating Andreas Floer, who died in 1991. Floer's main interests were dynamical systems, symplectic geometry, Yang–Mills theory, and low-dimensional topology. The essays, by mathematicians, describe developments in these fields. About half a dozen pages directly describe Floer or his work. See also #19.1.45. (PW) #24.2.99

HOGENDIJK, JAN P. Four Constructions of Two Mean Proportionals between Two Given Lines in the Book of Perfection *Istikmāl* of al-Mu'taman ibn Hūd, *Journal for the History of Arabic Science* **10**(1–2) (1994), 13–29, 151. Report on an original method, using a parabola and a circle, of constructing two mean proportionals found in the 11th-century Book of Perfection. See the review by J. L. Berggren in *Mathematical Reviews* **96k**:01010. (CJ) #24.2.100

HOLST, PER A. Svein Rosseland and the Oslo Analyzer, *IEEE Annals of the History of Computing* **18** (4) (1996), 16–26. Describes the mechanical differential analyzer at Blindern, Norway, and indicates the role that S. Rosseland, a professor at Oslo's Theoretical Astrophysics Institute, played in its development. (LSG) #24.2.101

HOMANN, FREDERICK A. Mathematics and Prophecy: Faith and Reason in Simone Weil, *Faith and Reason* **11** (1985), 264–279. An examination of Simone Weil's thoughts that ''give insights, and problems, both for the mathematician and the religious philosopher.'' Weil's thoughts are based on those of Greek mathematicians. (DEZ) #24.2.102

HORMIGÓN, MARIANO. La Enseñaza de las matemáticas en España en el siglo XIX [The Teaching of Mathematics in Spain in the 19th Century], pp. 1–21 in #24.2.137. Teaching of mathematics in 19th-century Spain. The importance of García de Galdeano. (VA) #24.2.103

HORMIGÓN, MARIANO. *See also* #24.2.65 and #24.2.134.

HORNG, WANN-SHENG. Hua Hengfang (1833–1902) and His Notebook on Learning Mathematics—*Xue suan bi tan, Philosophy and the History of Science* **2** (1993), 27–76. Hua Hengfang's major concern was to motivate studies in newly transmitted mathematical knowledge such as algebra and calculus by a critical discussion of Chinese traditional mathematical methods. In this way he attempted to consolidate the process of modernization of Chinese mathematics in the late 19th century and promote the teaching of Western mathematics. (JGF) #24.2.104

HØYRUP, JENS. *See* #24.2.36.

HUYLEBROUCK, D. The Bone That Began the Space Odyssey, *The Mathematical Intelligencer* **18** (4) (1996), 56–60. Recounts the usual story of the Ishango Bone and indicates how to write for permission to examine it at the Royal Belgian Institute for Natural Science. (TLB) #24.2.105

IHMIG, KARL-NORBERT. *See* #24.2.91.

INEICHEN, ROBERT. Zur Mathematik in den Werken von Albertus Magnus, *Freiburger Zeitschrift für Philosophie und Theologie* **40** (1993), 55–87. The author tends to redress the neglect he perceives in the historical literature–outside of mathematics and history of mathematics—of Albertus Magnus as a mathematician. After an introduction to Euclid's *Elements* and its reception in the middle ages, the mathematics in Albertus Magnus's philosophical and theological writings is described. The author emphasizes that Albertus Magnus's commentary on Euclid was the first written in the Latin West. (ACL) #24.2.106

JAHNKE, HANS NIELS. *See* #24.2.60.

JAMI, CATHERINE. *See* #24.2.107.

JESSEN, E. *See* #24.2.83.

JI, ZHI GANG. Liu Zhuo's Quadratic Interpolation Algorithm and its Historical Development in the Tang Dynasty [in Chinese], *Journal of Northwest University* **25** (2) (1995), 95–100. This paper gives an analysis of the quadratic interpolation method developed by Liu Zhuo (ca. 600 A.D.) in modern mathematical terms. The author first uses formulae and then presents an algorithmic procedure which is closer to the style of ancient Chinese texts. See the review by Catherine Jami in *Mathematical Reviews* **96j**:01005. (HEK) #24.2.107

JOEL, J. S. *See* #24.2.76.

JOHANSSON, MAGNUS. Early Analog Computers in Sweden—With Examples from Chalmers University of Technology and the Swedish Aerospace Industry, *IEEE Annals of the History of Computing* **18** (4) (1996), 27–33. A brief overview of early analog computing in Sweden in the 1940s and 1950s. By the late 1960s Sweden was one of the most computer-intensive countries. However, Sweden was unable to maintain a general computer production. (LSG) #24.2.108

JONES, CHARLES V. Finding Order in History Learning: Defining the History and Pedagogy of Mathematics, pp. 35–45 in #24.2.137. The author proposes the use of complexity theory in order to find order in learning history and proposes to start a research program in this direction. (VA) #24.2.109

JOSEPH, A.; MIGNOT, F.; MURAT, F.; PRUM, B.; AND RENTSCHLER, R., eds. *Proceedings of the First European Congress of Mathematicians: Paris, July 6–10, 1992,* Basel/Boston/Berlin: Birkhäuser, 1994, 1628 pp., $254.00. Papers, collected in three volumes, originally delivered at the First European Congress of Mathematicians. Some of the papers make allusions to history, especially the roundtable discussions reported in volume III. (PW) #24.2.110

KAMMAREDDINE, F.; AND LAAN, T. A Reflection on Russell's Ramified Types and Kripke's Hierarchy of Truths, *Journal of the IGPL* **4** (1996), 195–214. The authors examine the work of Russell and Kripke in this publication from the Interest Group in Pure and Applied Logic. (IA) #24.2.111

KATZ, VICTOR J. *See* #24.2.98 and #24.2.161.

KENNEDY, E. S. *See* #24.2.169.

KING, R. BRUCE. *Beyond the Quartic Equation,* Boston: Birkhäuser, 1996. After Abel had shown the impossibility of solving the general quintic equation by radicals and Galois had put the result in a general context, other mathematicians such as Hermite, Gordan, and Klein studied nonalgebraic solutions of such equations. The author gives an exposition of Galois theory and elliptic functions and then applies these tools to develop those nonalgebraic solutions. ''This book,'' says the author, ''is an effort to present essential aspects of this classical and apparently largely forgotten mathematics in modern form.'' (PW) #24.2.112

KLEIN, FELIX. Consideraciones comparativas sobre nuevas investigaciones geométricas [Comparative Considerations on New Geometric Researches], *Mathesis* (*México*) **11** (1995), 331–370. A Spanish translation, by Carlos Prieto de Castro, of Klein's celebrated *Erlanger Programm.* (VA) #24.2.113

KLEINER, ISRAEL; AND MOVSHOVITZ-HADAR, NITSA. Paradoxes in Mathematics: History and Pedagogy, pp. 23–34 in #24.2.137. The authors present some paradoxes and use them to show how they have inspired the clarification of basic concepts and the introduction of major results. (VA) #24.2.114

KNOBLOCH, EBERHARD. L'analogie et la pensée mathématique, in *Mathématiques et philosophie de l'antiquité à l'âge classique,* Paris: CNRS, 1991, pp. 217–237. The uses of analogy in mathematical discovery and justification is illustrated by examples in Euler, Laplace, Leibniz, Newton, and others. See the extensive English summary by Eduard Glas in *Mathematical Reviews* **96i**:01002. (ACL) #24.2.115

KNOBLOCH, EBERHARD. *See also* #24.2.45, #24.2.84, #24.2.158, and #24.2.190.

KNORR, WILBUR R. The Wrong Text of Euclid: On Heiberg's Text and Its Alternatives, *Centaurus* **38** (1996), 208–276. In 1881 M. Klamroth argued that medieval Arabic texts of the *Elements* represented an older form of the text more faithfully than extant Greek versions. In 1884 Heiberg claimed the superiority of the Greek text, in an argument which appeared to settle the matter. But Klamroth was right and Heiberg was wrong. This may significantly change our understanding of ancient mathematics. (JGF) #24.2.116

KOLMOGOROV, A. N.; AND YUSHKEVICH, A. P. *Mathematics of the 19th Century: Geometry, Analytic Function Theory,* Basel/Boston/Berlin: Birkhäuser, 1996, vii + 291 pp. A translation by Roger Cooke from the 1981 Russian original. The first part is an historical survey of 19th-century geometry—analytic and differential geometry, projective geometry, algebraic geometry and geometric algebra, non-Euclidean geometry, multidimensional geometry, topology, and geometric transformations. The second part similarly surveys 19th-century analytic function theory. There is an extensive list of the literature. See also #20.1.58. (PW) #24.2.117

KONHAUSER, JOSEPH D. E.; VELLEMAN, DAN; AND WAGON, STAN. *Which Way Did the Bicycle Go?,* Washington, DC: The Mathematical Association of America, 1996, xv + 237 pp., softbound, $24.95. A collection of 190 problems posted by one of our former abstracters, Joe Konhauser (1924–1992), for 25 years at Macalester College, some of which contain historical notes. (DEZ) #24.2.118

KUMAR, DEEPAK. The "Culture" of Science and Colonial Culture, India 1820–1920, *British Journal for the History of Science* **29** (1996), 195–209. A leading figure in the Bengal Renaissance was Bal Shastri Jambhekar (1802–1846), the first Indian to become a professor of mathematics, at Elphinstone College, Bombay, who worked for science learning through the Marathi language. Master Ramchandra (1821–1880) tried to revive the Indian spirit of algebra, from Bhaskara onward. (JGF) #24.2.119

LAAN, T. *See* #24.2.111.

LAUGWITZ, DETLEF. *See* #24.2.179.

LAVINE, SHAUGHAN. *Understanding the Infinite,* Cambridge, MA/London: Harvard Univ. Press, 1994, 372 pp., hardbound, $39.95. An historical account of, and discussion of the source of our intuitions concerning the infinite in mathematics. This is a philosophical study which calls upon both technical matters and the history of mathematics. (PW) #24.2.120

LEVY, PHILIP. Charles Spearman's Contributions to Test Theory, *British Journal of Mathematical and Statistical Psychology* **48** (1995), 221–235. The origins of test theory in Spearman's work between 1904 and 1913 on the attenuation of correlations due to errors of measurement, featuring his purposes, assumptions, algebraic style, and caveats, and the criticisms of Karl Pearson and William Brown, among others. (JGF) #24.2.121

LITTEN, FREDDY. Die Carathéodory-Nachfolge in München 1938–1944, *Centaurus* **37** (1994), 154–172. Carathéodory became an emeritus professor at Munich University in 1938. This account of the attempt to select someone of comparable stature to succeed him against the background of the National Socialist regime is based on hitherto unused archival sources. Candidates included G. Herglotz, B. L. van der Waerden, and C. L. Siegel. (ACL) #24.2.122

LORCH, LEE. *See* #24.2.51.

LOVIE, A. D. Who Discovered Spearman's Rank Correlation? *British Journal of Mathematical and Statistical Psychology* **48** (1995), 255–269. Spearman's rank correlation coefficient ρ (*rho*) is the one nonparametric measure of association to feature in modern elementary statistics. Its tortuous route from 1904 to the early 1950s casts doubts on the extent to which any one person can be easily identified with the coefficient. It was the creation of a lengthy collective process whose form was shaped over time by many different people, pressures, and interests. (JGF) #24.2.123

LOVIE, A. D. *See also* #24.2.124.

LOVIE, PAT; AND LOVIE, A. D. The Cold Equations: Spearman and Wilson on Factor Indeterminacy, *British Journal of Mathematical and Statistical Psychology* **48** (1995), 237–253. It has been suggested that in 1928 the American, E. B. Wilson, demolished Spearman's two-factor theory of mental ability by demonstrating its fundamental indeterminacy. Unpublished letters show, however, that Spearman's aim was to rescue the theory, not destroy it. The evidence shows their relationship to be cooperative and illustrates the socially negotiated nature of science. (JGF) #24.2.124

LUN, A. W. C. *See* #24.2.39.

MANCOSU, PAOLO. *Philosophy of Mathematics and Mathematical Practices in the Seventeenth Century,* New York: Oxford Univ. Press, 1996, 275 pp., $60. An account of the interaction between the philosophy and the practice of mathematics in the 17th century. The book includes studies of the relationship between classical Greek mathematics and Cavalieri's geometry of indivisibles and of Guldin's centers of gravity, the foundational assumptions of Cartesian geometry, the problem of continuity, paradoxes of the infinite, and foundational debates concerning Leibniz's differential calculus. (PW) #24.2.125

MÁRKI, LÁSZLÓ; PÖSCHEL, REINHARD; AND VOGEL, HANS-JÜRGEN. Hans-Jürgen Hoehnke, *Semigroup Forum* **52** (2) (1996), 112–118. A tribute to the German algebraist, H.-J. Hoehnke, who mostly worked in Berlin at the Mathematical Institute of the DDR Academy of Sciences. He was an editor of *Semigroup Forum* from 1970 to 1990. (HEK) #24.2.126

MARSDEN, BRUCE. Seeking a Language in Mathematics 1523–1571, *Reformation* **1** (1996), 181–220. In the period from Tunstall's *De art supputandi* (1522) to Thomas Digges's *Pantometria* (1571), authors were concerned with reconstituting mathematical knowledge, translating it into English, developing certain features for immediate use, and achieving clarity of thought and expression for communication to those not yet skilled in mathematical matters. (JGF) #24.2.127

MARTZLOFF, JEAN-CLAUDE. *A History of Chinese Mathematics,* Berlin/Heidelberg/New York: Springer Verlag, 1997, xii + 485 pp., hardbound; DM 78, sFr 69, ÖS 569,40. A translation by Stephen S. Wilson of *Histoire des Mathématiques Chinoises* (Paris: Masson, 1978). Part I deals with the context of Chinese mathematics, while Part II is devoted to the content. See also #16.4.82. (DEZ) #24.2.128

MASANI, P. R. The Aftermath of Cramér's Work on Stochastic Processes, *Scandinavian Actuarial Journal* **1** (1995), 66–96. A personal interpretation and survey of Cramér's work on stochastic processes. See the review by M. M. Rao in *Mathematical Reviews* **96j**:01032. (HEK) #24.2.129

MATIJASEVICH, YURI. *See* #24.2.149.

MCCARTHY, DANIEL. The Lunar and Paschal Tables of *De ratione paschali* Attributed to Anatolius of Laodicea, *Archive for History of Exact Sciences* **49** (1996), 285–320. *De ratione paschali* is a widely known text whose seven lunar and pascal tables seem to have been deliberately corrupted by Wilfred in the middle of the 7th century as part of the political–theological intrigues of the period around the affiliations of the kingdom of Northumbria. The corrupted text was prototype and source material for Bede's computus works. (JGF) #24.2.130

MENESES RODRÍGUEZ, SHARAY. *See* #24.2.10.

MERTENS, ROBERT A. "Let Newton Be! And All Was Light." Life, Work, and Influence of a Genius, *Mededelingen van de Koninklijke Academie voor Wetenschappen, Letteren en Schone Kunsten van België* **56** (1) (1994), 1–26. Lecture on Newton's life and work given in December 1992. Translated from the Dutch. See the review by Peeter Müürsepp in *Mathematical Reviews* **6k**:01013. (CJ) #24.2.131

MIGNOT, F. *See* #24.2.110.

MOLLAND, GEORGE. Addressing Ancient Authority: Thomas Bradwardine and *Prisca sapientia, Annals of Science* **53** (1996), 213–233. Bradwardine's *De causa dei* (1344), pervaded by a mathematical consciousness, provides a valuable source for late medieval views on the relationship between science and religion.

He drew on both revelation and authority as sources of scientific knowledge. An ancient text led him to an arresting image of the universe as a magnetically driven clock. (JGF) #24.2.132

MORALES ALDANA, LEONEL. Aritmética maya. Propuesta metodológica [Mayan Arithmetic: A Methodological Proposal], pp. 119–128 in #24.2.137. The aim is to represent the Mayan counting system as a base 20, positional system, along with algorithms for arithmetical operations to propose a didactic algorithm for the sum. (VA) #24.2.133

MORALES ALDANA, LEONEL. *Matemática Maya* [*Mayan Mathematics*], Guatemala: Editorial La Gran Aventura, 1994, 79 pp. See the review by Mariano Hormigón in *LLULL* **18** (1995), 693–694. (VA) #24.2.134

MORETTO, ANTONIO. *See* #24.2.190.

MOVSHOVITZ-HADAR, NITSA. *See* #24.2.114.

MURAT, F. *See* #24.2.110.

MURAWSKI, ROMAN. The Contributions of Zygmunt Ratajczyk to the Foundations of Arithmetic, *Notre Dame Journal of Formal Logic* **36** (1995), 502–504. Obituary of the logician, Zygmunt Ratajczyk. See *Mathematical Reviews* **96i**:01032. (ACL) #24.2.135

MURAWSKI, ROMAN. *See also* #24.2.181.

MÜÜRSEPP, PEETER. *See* #24.2.131.

NEUMANN, PETER M. *See* #24.2.5 and #24.2.176.

NOBRE, SERGIO. A difusão da matemática na Alemanha no inicío do século XV191 [The Diffusion of Mathematics in 18th-Century Germany], pp. 157–166 in #24.2.137. This paper appeared earlier. See #23.2.125. (VA) #24.2.136

NOBRE, SERGIO, ed. *Proceedings of the Meeting of the International Study Group on Relations between History and Pedagogy of Mathematics,* Blumenau (Brazil): HPM, 1994, viii + 231 pp. The papers are abstracted separately. (VA) #24.2.137

OSSERMAN, ROBERT. *Poetry of the Universe,* New York/London/Toronto/Sydney/Auckland: Doubleday, 1995, xiv + 210 pp., hardbound, $18.95 (also available softbound). A popular exposition of the evolution of current ideas of the cosmos, emphasizing the role of geometry and the ideas of great geometers from Greek antiquity through the 19th century. (PW) #24.2.138

OTERO, MARIO H. Dos tipos de convencionalismo y el crecimiento del conocimiento científico: La polémica Poincaré versus LeRoy [Two Types of Conventionalism and the Growth of Scientific Knowledge: The Poincaré–LeRoy Controversy], *Galileo* **11** (May 1995), 25–32. (VA) #24.2.139

OTTE, MICHAEL. *See* #24.2.78 and #24.2.91.

OWENS, LARRY. Where Are We Going, Phil Morse? Changing Agendas and the Rhetoric of Obviousness in the Transformation of Computing at MIT, 1939–1957, *IEEE Annals of the History of Computing* **18** (4) (1996), 34–41. Deals with the failure of the attempt to establish a computational center at MIT in the 1930s and the resultant effect on the shift from analog to digital computing during the 1950s. (LSG) #24.2.140

PAMBUCCIAN, VICTOR V. *See* #24.2.53.

PARK, WOOSUK. *See* #24.2.72.

PECKHAUS, VOLKER. *Hilbert Programm und Kritische Philosophie—Das Göttinger Modell interdisziplinärer Zusammenarbeit zwischen Mathematik und Philosophie,* Göttingen/Zürich: Vandenhoeck & Ruprecht, 1990, ix + 291 pp., paperbound, DM 78. Based on archival studies, this book treats the Göttingen implementation of David Hilbert's program of 1899 for the axiomatic foundation of mathematics. Of

central importance for the program's reshaping are the impulses coming from discussions about the antinomies of set theory and Hilbert's science—political steps toward an institutionalization of research on the foundations of mathematics in Göttingen. Extensively discussed are Hilbert's efforts for paid university positions for Ernst Zermelo and Leonard Nelson, who were expected to contribute substantially to the elaboration of the program from both the mathematical and the philosophical points of view. (HGS) #24.2.141

PIN, JEAN-ERIC. *See* #24.2.61.

POMERANCE, CARL. A Tale of Two Sieves, *Notices of the American Mathematical Society* **43** (1996), 1473–1485. A historical survey of the quadratic sieve and number field sieve methods for factoring large numbers, highlighting the work of Maurice Kraitchik and Richard Schroeppel in the 1920s, the author in the 1980s, the Lenstra brothers in the early 1990s, and the teamwork approach today. (DEZ) #24.2.142

POPPER, KARL. *See* #24.2.85.

PÖSCHEL, REINHARD. *See* #24.2.126.

PRUM, B. *See* #24.2.110.

PUCHTA, SUSANN. On the Role of Mathematics and Mathematical Knowledge in the Invention of Vannevar Bush's Early Analog Computers, *IEEE Annals of the History of Computing* **18** (4) (1996), 49–59. Outlines the context out of which the development of the continuous (or product) integraph (the immediate forerunner of Vannevar Bush's differential analyzer) evolved. Comments on the affinity between transmission line research and teaching at MIT's electrical engineering department, on the one hand, and the creation of the product integraph for evaluating integrals, resulting from the differential equations of transmission problems, on the other hand. (LSG) #24.2.143

PUTNAM, HILARY. Filosofía de la matemática: Por qué nada funciona [Philosophy of Mathematics: Why Nothing Works], *Galileo* **11** (May, 1995), 3–14. Spanish translation by Lucía Lewowicz of Putnam's report that appeared in James Conant, ed., *Works and Life of Hilary Putnam,* Cambridge: Harvard Univ. Press. (VA) #24.2.144

PYENSON, LEWIS. Inventory as a Route to Understanding: Sarton, Neugebauer, and Sources, *History of Science* **33** (1995), 253–282. The life, works, and methods of George Sarton and Otto Neugebauer are compared. See Dirk J. Struik's summary in *Mathematical Reviews* **96i**:01003. (ACL) #24.2.145

RAO, M. *See* #24.2.129.

RASNER, JORGE. El principio de realidad: Entre la física clásica y la cuántica [The Principle of Reality: Between Classical Physics and Quantum Physics], *Galileo* **11** (May 1995), 33–48. (VA) #24.2.146

RECALDE, LUIS CORNELIO. *See* #24.2.8.

REICH, KARIN. Michael Stifel: Zwischen Rechenmeistertradition und Mathematik als Wissenschaft, *Mitteilungen der Mathematischen Gesellschaft in Hamburg* **14** (1995), 23–33. The 16th-century mathematician, Michael Stifel, is historically situated between the practical arithmetic tradition of his time and the treatment of mathematics as a science. See the review by Christoph J. Scriba in *Mathematical Reviews* **96i**:01011. (ACL) #24.2.147

REID, CONSTANCE. Being Julia Robinson's Sister, *Notices of the American Mathematical Society* **43** (1996), 1486–1492. An account of the personal side of the mathematician, Julia Robinson, by her sister, a popular writer of mathematics and about mathematicians. (DEZ) #24.2.148

REID, CONSTANCE. *Julia: A Life in Mathematics,* Washington: The Mathematical Association of America, 1996, 136 pp., hardbound, $27. An account of the life and work of Julia Bowman Robinson (1919–1986). "The Autobiography," told in the first person but written by Robinson's sister, Constance Reid, describes her early life in Southern California; education at San Diego and Berkeley, where she

met Raphael Robinson; and work on Hilbert's 10th problem. Other parts of the book are Lisl Gaal, "Julia Robinson's Dissertation," pp. 85–90; Martin Davis, "The Collaboration in the United States," pp. 91–98; and Yuri Matijasevich, "My Collaboration with Julia Robinson," pp. 99–116. (DEZ) #24.2.149

RENTSCHLER, R. *See* #24.2.110.

RIBENBOIM, PAULO. *See* #24.2.35.

RICE, ADRIAN. Augustus De Morgan: Historian of Science, *History of Science* **34** (1996), 201–240. A critical account of the historical writings of De Morgan (1806–1871). The style of his historiography and the scattering of his publication outlets may help explain the current neglect of his historical work. (JGF) #24.2.150

RICE, ADRIAN. Mathematics in the Metropolis: A Survey of Victorian London, *Historia Mathematica* **23** (1996), 376–417. An overview of university-level mathematics teaching in London from 1837 to 1901 and the mathematicians who taught it, including De Morgan, Sylvester, and Pearson. The presentation includes discussions of the variety of and competition among institutions, opportunities for women, and the role of military and technical mathematics. (DEZ) #24.2.151

RICE, ADRIAN. The Origin of the De Morgan Medal, *London Mathematical Society Newsletter* **240** (1996), 20–22. Although there were calls for a memorial to the first president of the LMS, Augustus De Morgan, almost immediately after his death in 1871, it took over 13 years for these to crystallize in the form of the De Morgan medal as it was eventually first awarded to Arthur Cayley in 1884. (JGF) #24.2.152

RIGATELLI, LAURA TOTI. *Evariste Galois 1811–1832,* Basel/Boston/Berlin: Birkhäuser Verlag, 1996, 162 pp., paperbound, $32. This version of the biography of Evariste Galois was translated from the 1993 Italian edition, *Evariste Galois, matematica sulle barricate* [*Mathematics on the Barricades*], by John Denton. The author, who was aided in her investigation by a small band of students, provides a new version of the circumstances leading to Galois's death, based on hitherto unknown documents—Galois as political martyr. The English edition contains a concluding chapter, "The Mathematical Work of Evariste Galois," not contained in the original. (DEZ) #24.2.153

RODRÍGUEZ ARCE, PEDRO. La etnomatemática precolombina [Pre-Columbian Ethnomathematics], pp. 349–377 in #24.2.157. The author shows the existence of geometric forms and designs in pre-Columbian Costa Rican cultures. (VA) #24.2.154

RODRÍGUEZ ARCE, PEDRO; AND RUIZ ZÚÑIGA, ÁNGEL. Antes de la reforma de Mauro Fernández [Before the Reform of Mauro Fernández], pp. 3–33 in #24.2.157. The history of mathematics in Costa Rica from the Colonial and Independent periods to the last third of the 19th century, emphasizing pedagogical problems and solutions in teaching mathematics. The usual connection between mathematics and engineering is examined. (VA) #24.2.155

RODRÍGUEZ SMITH, JULIO. *See* #24.2.10.

RUDIN, WALTER. *The Way I Remember It,* Washington/London: The American Mathematical Society/ The London Mathematical Society, 1996, ix + 191 pp., hardbound, $29. Autobiography of the analyst, Walter Rudin (born 1921). Part I (pp. 1–123) discusses Rudin's life from his childhood in Vienna, escape to other European countries, and eventual settling at the University of Wisconsin. That part ends with an extensive photo section. In Part II the author describes his contributions to various parts of analysis. (DEZ) #24.2.156

RUIZ ZÚÑIGA, ÁNGEL, ed. *Historia de las matemáticas en Costa Rica* [*History of Mathematics in Costa Rica*], San José, Costa Rica: Editorial de la Universidad de Costa Rica and Editorial de la Universidad Nacional, 1995, 446 pp. This book consists of a series of essays (chapters) written by various authors on the history of mathematics in Costa Rica. Each essay is abstracted separately. The approach is externalist, giving priority to institutional, social, and individual aspect of history. (VA) #24.2.157

Ruiz Zúñiga, Ángel. *See also* #24.2.13, #24.2.14, #24.2.15, #24.2.16, #24.2.17, #24.2.18, #24.2.155, #24.2.177, and #24.2.178.

Rutherford, Donald. *Leibniz and the Rational Order of Nature,* Cambridge: Cambridge Univ. Press, 1995, xiv + 301 pp., $54.95. This book gives a comprehensive interpretation of G. W. Leibniz's philosophy without any relation to his mathematics. The author covers the theodicy as an essential part of Leibniz's philosophy. See the review by Eberhard Knobloch in *Mathematical Reviews* **96j**:01015. (HEK) #24.2.158

Rynasiewicz, Robert. By Their Properties, Causes and Effects: Newton's Scholium on Time, Space, Place and Motion. II. The Context, *Studies in History and Philosophy of Science* **26** (1995), 295–321. In this second part the author concludes his study on Newton's scholium in the *Principia Mathematica* on absolute space and time. He deals with Newton's reaction to Descartes's ideas on motion. Several manuscript sources are considered. See the review by Niccolò Guicciardini in *Mathematical Reviews* **96j**:01016. (HEK) #24.2.159

Sachdev, Sohindar S. African–American Mathematicians and Their Contributions, pp. 55–59 in #24.2.137. The author insists on changing the current ethnocentric presentation of mathematics in American classrooms, proposing that pictures and achievements of minority mathematicians be included in textbooks. (VA) #24.2.160

Saito, Ken. Quelques observations sur l'édition des *Coniques* d'Apollonius de Francesco Maurolico, *Bollettino di storia delle scienze matematica italiana* **14** (1994), 239–258. Francesco Maurolycus (1494–1575) was the greatest mathematician produced by Sicily since the time of Archimedes. The author discusses the details of Maurolycus' 1547 translation of Apollonius' *Conics.* Through a comparison of Maurolycus' work with the Greek original and with the Latin translation of Giovanni Memmo (1537), the author concludes that Maurolycus did not make a new translation from a Greek version, but primarily used Memmo's edition. See the review by Victor J. Katz in *Mathematical Reviews* **96j**:01009. (HEK) #24.2.161

Saliba, George. *See* #24.2.41.

Salmon, Vivian. Thomas Harriot (1560–1621) and the English Origins of Algonkian Linguistics, *Historiographia Linguistica* **19** (1992), 25–56. Harriot was the first English traveler to North America known to have recorded an indigenous language, for which he devised a dictionary and a phonetic alphabet. In 1988 a detailed holograph copy of the latter was found by Christopher Stray in Westminster School library. (JGF) #24.2.162

Sánchez Fernández, Carlos. Usos y abusos de la historia de la matemática en el proceso de aprendizaje de los profesionales del tercer milenio [Uses and Abuses in the History of Mathematics in the Learning Process of Professionals in the Third Millennium], pp. 99–108 in #24.2.137. (VA) #24.2.163

Saraiva, Luis M. R. The First Outline in Portugal of a University Course in the History of Mathematics, pp. 109–118 in #24.2.137. A survey of the works of Rodolfo Ferreira Dias Guimarães (1866–1918), emphasizing his mathematics and history of mathematics papers. There is also an analysis of his proposal for a university course in the history of mathematics. (VA) #24.2.164

Sato, Ken-Ichi. Reevaluation of Tengenjutsu or Tianyuanshu: In the Context of Comparison between China and Japan, *Historia Scientiarum* (*2*) **5** (1) (1995), 57–67. The review by Keizo Hashimoto in *Mathematical Reviews* **96i**:01010 criticizes the author's argument that Chinese mathematicians were interested only in applying mathematical tools rather than in studying the tools themselves. (ACL) #24.2.165

Schlote, Karl-Hienz. *See* #24.2.82.

Schmetterer, L. *See* #24.2.85.

SCHMIDT, OLAF. *See* #24.2.28.

SCHOLZ, ERHARD, ed. *Geschichte der Algebra: Eine Einführung,* Vienna/Zurich: B. I.-Wissenschafts Verlag Mannheim, 1990. A collection of articles by 15 contributors on the history of algebra. Ostensibly aimed at teachers, the last chapter nonetheless includes material on 20th-century developments. See the review by Michael Toepell in *Historia Mathematica* **23** (1996), 441–445. (DEZ) #24.2.166

SCHRÖDER, WILFRIED. *See* #24.2.87.

SCRIBA, C. J. *See* #24.2.45.

SEBERRY, JENNIFER. *See* #24.2.73.

SEDDON, FRED. *Aristotle and Łukasiewicz on the Principle of Contradiction,* Ames, IA: Modern Logic Publishing, 1996, xx + 142 pp., paperback, $29.95. A section-by-section evaluation of Jan Łukasiewicz's analysis of Aristotle's treatment of the Principle of Contradiction. See also #24.1.171. (DEZ) #24.2.167

SELACU, V. *See* #24.2.48.

SERFATI, MICHEL. *Regulae* et mathématiques, *Theoria* (*San Sebastián*) **9** (2) (1994), 61–108. *The Rules for the Direction of the Mind* was drafted by Descartes during the winter of 1627–1628 but was only published posthumously in 1701. Descartes used his experience as a young mathematician to formulate rules that are essentially those that he published in his *Geometry* in 1637. See the review by William R. Shea in *Mathematical Reviews* **96j**:01017. (HEK) #24.2.168

SERNESI, EDOARDO. *See* #24.2.35.

SESIANO, JACQUES. Le *Kitāb al-Misāḥa* d'Abū Kāmil, *Centaurus* **38** (1996), 1–21. A detailed summary of Abū Kāmil's 9th-century treatise on measure and geometry. This manuscript, 2672 in the library Mağlis-I Sanā in Tehran, though known in the literature, has not been made public despite Abū Kāmil's preference that it be independent of his better-known work on algebra. See the review by E. S. Kennedy in *Mathematical Reviews* **96j**:01008. (ACL) #24.2.169

SHEA, WILLIAM R. *See* #24.2.168.

SHEN, KANGSHENG. Contributions to the Summation of Integer Power Series of Arbitrary Degree by Eastern Mathematicians, *Philosophy and the History of Science* **2** (1993), 105–120. Several eastern mathematicians, among them Alhazen, Zhu Shijie, and Seki Kowa, made substantial contributions toward formulas for the sums of powers of natural numbers, before those devised by Bernoulli in 1713. With an historiographical editorial comment. (JGF) #24.2.170

SIEGMUND-SCHULTZE, REINHARD. Las frustradas tentativas de reforma de la formación de los ingenieros en los Estados Unidos de América en torno a 1900 sobre el trasfondo de similares reformas en Alemania [The Unsuccessful Attempts to Reform the Mathematical Education of Engineers in the USA around 1900 in the Context of Similar Reforms in Germany], *LLULL* **18** (1995), 619–652. The author's aim is to study "attempts to reform the mathematical education of engineers in [the] USA around 1900 in an international context, with special reference to the previous antimathematical movement of German engineers." (VA) #24.2.171

SIEGMUND-SCHULTZE, REINHARD. *Mathematische Berichterstattung in Hitlerdeutschland,* Göttingen/Zürich: Vandenhoeck & Ruprecht, 1993, x + 263 pp., paperbound, DM 70. The study is based on an extensive collection of documents related to the social and political conditions for publishing the *Jahrbuch über die Fortschritte der Mathematik.* The history of the *Jahrbuch* shows that scientific reviewing depends on manifold circumstances; economic, political, and ideological ones, on the one hand, and inner-scientific ones, on the other hand. The basic historiographic idea of the study is the contraposition between conservative and modern forms of mathematical reviewing, which has become evident particularly in the different conceptions of the *Jahrbuch* and its competitor, *Zentralblatt für Mathematik.* (HGS) #24.2.172

SIERKSMA, GERARD. The Mathematical Sciences in Groningen before and after Bernoulli's Stay, *Nieuw Archief voor Wiskunde* **13** (1995), 37–48. The evolution of mathematics teaching at the University of Groningen from 1614 to the beginning of the 20th century. See the review by P. Bockstaele in *Mathematical Reviews* **96i**:01040. (ACL) #24.2.173

SIGMUND, KARL. *See* #24.2.85 and #24.2.89.

SINGAL, M. K., ed. *Prof. J. N. Napur: Man and Mathematician,* New Delhi: Mathematical Sciences Trust Society, 1995, viii + 104 pp., Rs. 50. For the contents see *Mathematical Reviews* **96j**:01044. (HEK) #24.2.174

SMARANDACHE, FLORENTIN. *Collected Papers, vol. I,* Bucharest: Edirura Societatii Tempus, 1995, 301pp. Papers in various languages by the Rumanian–American mathematician, Florentin Smarandache. The greatest portion of the contents is on number theory. (PW) #24.2.175

SMITHIES, FRANK. *See* #24.2.85.

SOIFER, ALEXANDER. Issai Schur: Ramsey Theory before Ramsey, *Geombinatorics* **5** (1995), 6–23. After giving a brief account of Schur's life, this paper presents a study of the origins of certain combinatorial problems nowadays seen as part of Ramsey theory. In 1916 Schur proved that if m is any positive integer, if $\{1, 2, \ldots, N\}$ is partitioned as a union of m pairwise disjoint sets, and if N is sufficiently large, then there exist a, b, c in the same subset such that $a + b = c$. Although it is now known as Schur's Theorem, for Schur this was simply a lemma embedded in a paper on number theory. See the review by Peter M. Neumann in *Mathematical Reviews* **96j**:01034. (HEK) #24.2.176

SOLANO MÉNDEZ, DANILO; AND RUIZ ZÚÑIGA, ÁNGEL. El Dr. Bernardo Alfaro Sagot y las matemáticas [Bernardo Alfaro Sagot and His Mathematics], pp. 305–314 in #24.2.157. Biographical sketch of Costa Rican mathematics professor, Bernardo Alfaro Sagot. (VA) #24.2.177

SOLANO MÉNDEZ, DANILO; AND RUIZ ZÚÑIGA, ÁNGEL. Entre la creación de la Universidad y la reforma de Facio [Between the Creation of the University and Facio's Reform], pp. 99–115 in #24.2.157. An examination of mathematics teaching practices in universities during the period 1941–1956 at the Schools of Sciences, Engineering, and Economics. Before 1956 mathematics was subordinated to the needs of the last two professional schools. Facio's reform allowed a broader and more proper space for teaching and research in mathematics. (VA) #24.2.178

SPALT, DETLEF D. Vollständigkeit als Ziel historischer Explikation: Eine Fallstudie [Completeness as the Goal of Historical Explication: A Case Study], in *Collegium Logicum, Vol. 1,* Vienna: Springer, 1995, pp. 26–36. By completeness in the history of mathematics the author means that changes in the ontological nature of mathematical objects must be taken into account. See the review by Detlef Laugwitz in *Mathematical Reviews* **96j**:01003. (HEK) #24.2.179

SRINIVASAN, G. A Profile of Chandra, *Current Science* **70** (1996), 95–101. An obituary of Subrahmanyan Chandrasekhar. *See* #24.2.9. (HEK) #24.2.180

STAUFFER, DAVID. L'avènement de théorie sémantique de la vérité de Tarski [The Advent of Tarski's Semantic Theory of Truth], in *Études logiques,* Neuchâtel: Univ. of Neuchâtel, 1993, pp. 71–121. A study of the predecessors of Tarski's semantic theory of truth. The conceptions of Descartes, Leibniz, and Wittgenstein are presented, discussed, and compared with that of Tarski. See the review by Roman Murawski in *Mathematical Reviews* **96j**:01035. (HEK) #24.2.181

STEWART, LARRY. Seeing through the Scholium: Religion and Reading Newton in the Eighteenth Century, *History of Science* **34** (1996), 123–165. Newton's General Scholium in the second *Principia* edition of 1713 was an open announcement of his religious views, tied expressly to the promotion of experimental science. Whatever his intention, readers recognized his religious views and publicly attacked them, providing the foundation for an orthodox counterattack against experimentalism. (JGF) #24.2.182

STRUIK, DIRK J. *See* #24.2.145.

SUSSMAN, HERBERT. Cyberpunk Meets Charles Babbage: *The Difference Engine* as Alternative Victorian History, *Victorian Studies* **38** (1994), 1–23. Essay review on the historiography represented by Gibson and Sterling's novel *The Difference Engine* (1991). The novel rejects the Foucauldian model of a seamless, invincible panoptical power as necessarily imbricated with information technology, imagining the emergence of a reconfigured subjectivity and a valorized cyborg art. (JGF) #24.2.183

TACHAU, KATHERINE H. Logic's God and the Natural Order in Late Medieval Oxford: The Teaching of Robert Holcot, *Annals of Science* **53** (1996), 235–267. The intersection of 13th-century metaphysics and 14th-century analysis in the lectures of Robert Holcot, a controversial and influential Oxford theologian of the 1330s. (JGF) #24.2.184

TAISBAK, CHRISTIAN MARINUS. A Tale of Half Sums and Differences: Ancient Tricks with Numbers, *Centaurus* **36** (1993), 22–32. Starting from the relation $A = s + d$, $B = s - d$ that can be satisfied by any four positive numbers with $A > B$, $s > d$, this article explores the range of quadratic identities that follow. These are then interpreted geometrically in the style of Euclid's *Elements* II, 2–10, with a further extension via Euclid's *Data* to *Elements* II, 11. (JGF) #24.2.185

TAISBAK, CHRISTIAN MARINUS. Zeuthen and Euclid's *Data* 86: Algebra—Or a Lemma about Intersecting Hyperbolas? *Centaurus* **38** (1996), 122–139. The author challenges Zeuthen's algebraic interpretation given in 1917 of Proposition 86 of the *Data* which Zeuthen had singled out as an example of Euclid's dexterity in handling algebraic problems in geometric form. (ACL) #24.2.186

TAUBES, CLIFFORD. *See* #24.2.99.

THÉRIEN, DENIS. *See* #24.2.61.

THIELE, RÜDIGER. Gauß' Arbeiten über kürzeste Linien aus der Sicht der Variationsrechnung, in *Proceedings of the 2nd Gauss Symposium. Conference A: Mathematics and Theoretical Physics* (*Munich, 1993*), Berlin: de Gruyter, 1995, pp. 167–178. Gauss's works on shortest lines from the viewpoint of variational calculus. See the summary by L. G. Chambers, *Mathematical Reviews* **96i**:01018. (ACL) #24.2.187

THURSTON, HUGH. *Early Astronomy,* New York/Berlin/Heidelberg: Springer, 1994, x + 268 pp., hardbound and paperbound. This book tells the history of astronomy from its earliest beginnings through the time of Galileo and Kepler. It explains the celestial phenomena observed, the methods of observation, and the kinds of calculations used. Although it contains a great wealth of information, it reads less like a tome for scholars than a companion to an amateur astronomer. (PW) #24.2.188

TOEPELL, MICHAEL. *See* #24.2.166.

TOLLEY, KIM. Science for Ladies, Classics for Gentlemen: A Comparative Analysis of Scientific Subjects in the Curricula of Boys' and Girls' Secondary Schools in the United States, 1794–1850, *History of Education Quarterly* **36** (1996), 129–153. As the Taunton Commission found in the 1860s for Britain, in the U.S. before the Civil War the study of science was more prevalent in girls' schools than in boys'. Although before 1830 science texts in girls' schools generally included less mathematics than those in boys' schools, by the 1860s the most difficult texts were comparable in mathematical complexity. (JGF) #24.2.189

TÖPFER, H.-J. *See* #24.2.83.

TOTH, IMRE. *I paradossi di Zenone nel Parmenide di Platone* [*Zeno's Paradoxes in Plato's Parmenides*], trans. Antonio Moretto, Naples: Istituto Italiano per gli Studi Filosofici, 1994, x + 108 pp., L24,000. This article, translated from German, analyzes Plato's *Parmenides* in connection with the Naples geometrical research of the time. The central problem there is the ontological status of incommensurable magnitudes. Zeno's paradoxes and certain logical issues associated with Plato's argument are examined using the tools of modern set theory. See the review by Eberhard Knobloch in *Mathematical Reviews* **96k**:01006. (CJ) #24.2.190

TRIEBEL, H. *See* #24.2.31.

TROMBA, ANTHONY. *See* #24.2.97.

TUMMERS, P. M. J. E., ed. *Anaritus' Commentary on Euclid. The Latin Translation, I–IV,* Nijmegen: Ingenium Publishers, 1994, 187 pp. A critical edition of the Latin translation by Gerard of Cremona of the commentaries on Books I to IV of the *Elements* by the 10th-century mathematician, Anaritus (or Anarizus) also was known as Abu l-'Abbās al-Faḍl ibn Hātim an-Nairīzī. See the review [in French] by Bernard Vitrac in *Historia Mathematica* **23** (1996), 445–446. (DEZ) #24.2.191

TYMPAS, ARISTOTLE. From Digital to Analog and Back: The Ideology of Intelligent Machines in the History of the Electrical Analyzer, 1870s–1960s, *IEEE Annals of the History of Computing* **18** (4) (1996), 42–48. Describes the search for a direct ancestor of the post-World War II computing ideology. Also attempts to interpret the ideology of intelligent machines as related to the appropriation of computing labor. (LSG) #24.2.192

VALKOVÁ, ANNA. 80th Birthday of Professor Anton Hutá, *Mathematica Slovaca* **45** (1995), 321–324. See *Mathematical Reviews* **96i**:01034. (ACL) #24.2.193

VAN DALEN, BENNO. On Ptolemy's Table for the Equation of Time, *Centaurus* **37** (2) (1994), 97–153. Theon, in his commentaries on Ptolemy's *Handy Tables,* did not fully appreciate Ptolemy's methods, which are here reconstructed. See the brief summary by H. Eelsalu in *Mathematical Reviews* **96i**:01008. (ACL) #24.2.194

VEA MUNIESA, FERNANDO. *Las matemáticas en la enseñanza secundaria en España en el siglo XIX* [*Mathematics in Secondary School Teaching in Spain in the 19th Century*], Zaragoza: Univ. de Zaragoza, 1995, 747 pp. See the review by María Ángeles Velamazán in *LLULL* **18** (1995), 700–702. (VA) #24.2.195

VELAMAZÁN, MARÍA ÁNGELES. *See* #24.2.195.

VELLEMAN, DAN. *See* #24.2.118.

VIHAN, PŘEMYSL. The Last Months of Gerhard Gentzen in Prague, in *Collegium logicum,* vol. 1, Vienna: Springer, 1995, pp. 1–7. The logician, Gentzen, died in a Czech prison in 1945. *Mathematical Reviews* **96i**:01023 contains a brief summary only. (ACL) #24.2.196

VILELA, DENISE SILVA. O subjetivismo na noção de ordem na teoria dos números transfinitos de Georg Cantor [The Subjectivism in the Notion of Order in Georg Cantor's Transfinite Number Theory], pp. 192–203 in #24.2.137. The author's aim "is to take care of the attacks on Georg Cantor's transfinite number theory, the target being the notion of order. . . . This situation is analyzed as a bibliographic problem." (VA) #24.2.197

VISOKOLSKI, SANDRA. Intuiciones geométricas y percepción visual en la concepción griega de la matemática: Ser o no ser [Geometrical Intuitions and Visual Perception in the Greek Conception of Mathematics: To Be or Not to Be], pp. 145–155 in #24.2.137. The author examines the role played by concrete empirical activity in Greek abstract geometrical constructions. (VA) #24.2.198

VITRAC, BERNARD. La Définition V.8 des *Eléments* d'Euclide, *Centaurus* **38** (1996), 97–121. The problematic Definition 8 of Book 5 of the *Eléments* is examined through an analysis of the terms that deal with proportionality. The author begins, for example, with a fresh look at the distinction between ratio (*logos*) and proportion (*analogia*). (ACL) #24.2.199

VITRAC, BERNARD. *See also* #24.2.191.

VITTI, CATARINA MARIA. História da Matemática: Um caminho para recuperar o prazer da aprendizagem [The History of Mathematics: A Way to Recover the Pleasure of Learning], pp. 185–189 in #24.2.137. A discussion of the use of history to overcome failure in teaching mathematics. (VA) #24.2.200

VOGEL, HANS-JÜRGEN. *See* #24.2.126.

VOLKOV, ALEXEI. Supplementary Data on the Values of π in the History of Chinese Mathematics, *Philosophy and the History of Science* **3** (1994), 95–110. Fractional approximations of π which may have been used by early medieval Chinese mathematicians are calculated from the quantitative analysis of standard measuring vessels. (JGF) #24.2.201

VOOLICH, ERICA DAKIN. Using Biographies in the Middle School Classroom, pp. 167–171 in #24.2.137. The paper addresses the pedagogical issue of how to include biographies in the middle school classroom and make them more effective as tools for teaching mathematics. (VA) #24.2.202

WAGON, STAN. *See* #24.2.118.

WEIBEL, CHARLES A. The Mathematical Enterprises of Robert Thomason, *Bulletin of the American Mathematical Society* **34** (1997), 1–13. A survey of the mathematical contributions of Bob Thomason to homotopy theory, category theory, algebraic geometry, and K-theory. For a personal account of Thomason see #24.1.167. (DEZ) #24.2.203

WEINSTEIN, ALAN. *See* #24.2.99.

WENDLAND, W. *See* #24.2.83.

WICK, D. *The Infamous Boundary: Seven Decades of Controversy in Quantum Physics,* Boston/Basel/Berlin: Birkäuser, 1995, xii + 244 pp., $49.50. This is a history of the varied problems (EPR, Bell's theorems) associated with attempts to construct a quantum mechanical world picture. An appendix called ''Probability in Quantum Mechanics,'' written by William G. Faris, gives a mathematical formulation of Bell's theorems. (PW) #24.2.204

WILSON, ROBIN. Stamp Corner: 1996 Anniversaries, *The Mathematical Intelligencer* **18** (4) (1996), 80. Shows German stamps of Leibniz (b. 1646) and Bessel (d. 1846), French stamps of Descartes (b. 1596) and Monge (b. 1746), and a Belgian stamp of Quetelet (b. 1796). (TLB) #24.2.205

WILSON, STEPHEN S. *See* #24.2.128.

WUSSING, HANS. *See* #24.2.45.

YUSHKEVICH, A. P. *See* #24.2.117.

ZEHNDER, EDUARD. *See* #24.2.99.

ZORMBALA, KONSTANTINA. Gauss and the Definition of the Plane Concept in Euclidean Elementary Geometry, *Historia Mathematica* **23** (1996), 418–436. A treatment of all the letters and notes from Gauss's *Nachlaß* concerning the concept of the plane, especially with his own definition of the plane in Euclidean geometry. This is preceded by a discussion of Euclid's treatment of the plane concept and followed by a discussion of developments after Gauss. (DEZ) #24.2.206

ZUBIETA, RUSSI FRANCISCO, Los fundamentos de la aritmética según Peano [The Foundations of Arithmetic According to Peano], *Mathesis* (*México*) **11** (1995), 371–382. An exposition of Peano's theory of natural numbers. (VA) #24.2.207